

Carter Stresses Importance of Innovation to Warfighters

DEPARTMENT OF DEFENSE NEWS, DEFENSE MEDIA ACTIVITY

(JUNE 10, 2016)

Jim Garamone

WASHINGTON—One theme of Defense Secretary Ash Carter's term in office has been ensuring the department gets warfighters what they need when they need it—now and in the future.

Carter told the Defense One Tech Summit at the Newseum here today that he is looking at the intersection between technology and defense as the logical place for this emphasis as he continues to put in place programs and organizations to meet the needs of warfighters faster and more efficiently in an increasingly competitive world.

Innovation Board

One example is the Defense Innovation Board, which the secretary announced in March. Alphabet executive chairman Eric Schmidt chairs the board, and Carter announced other members at the summit. The board will include Reid Hoffman, the head of LinkedIn; former U.S. Special Operations Command chief retired Navy Adm. William McRaven; and noted innovation historian Walter Isaacson, he said.

"And we've got some additional amazing innovators lined up, so stay tuned for who else will be joining them," he added. Carter said he has asked the board to keep DoD "imbued with a culture of innovation in people, organizations, operations, and technology." He wants the board to champion people who aren't afraid to try new things, fail, regroup, and try again, he said.

The secretary also said he wants to ensure the department is "doing everything we can to stay ahead of potential adversaries."

Strategic Capabilities Office

But the board does not act alone. DoD's Strategic Capabilities Office also is coming into its own, Carter said. The office, which the secretary established in 2012 when he was deputy secretary, re-imagines existing DoD systems and gives them new roles and game-changing capabilities to confound enemies.

"We're building fast, resilient microdrones that can be kicked out the back of a fighter jet moving at Mach .9 and fly through heavy winds," Carter said. "We're developing an arsenal plane, which will function as a very large airborne magazine with different conventional payloads, networked

to fifth-generation aircraft that act as forward sensors and targeting nodes."

DIUx

The secretary also pointed to his Silicon Valley start-up, the Defense Innovation Unit Experimental, or DIUx. He has since announced a second DIUx in Boston. These efforts are bridges between DoD and tech companies that might not normally consider doing business with the department, Carter said.

All of these efforts are based around people, the secretary said. "They're the key reason why our military is the finest fighting force the world has ever known," he added. "And in the future, we must continue to recruit and retain the very best talent for our all-volunteer force."

The secretary segued into a discussion of the Force of the Future and its implications for his signature initiative. The Force of the Future will "ensure that amid changes in generations, technologies, and labor markets, we're always postured to bring in, develop, and retain the best young men and women that America has to offer," he said.

The force initiative covers the personnel aspects of the department, he noted. "As part of that, we're implementing several new initiatives to give some of our own people, military and civilian, the opportunity to get out and to learn how the rest of the world works outside of our walls," he said.

Fellowships

Fellowship programs and a career intermission program are just two examples of the vistas now open to military personnel, Carter said. "We're also looking for ways to allow more of America's brightest minds to contribute to our mission of national defense," he added. "We're bringing in resident entrepreneurs, who will work with senior leaders on challenging projects for a year or two."

He also is hiring a chief recruiting officer to bring in top executives for stints in civilian leadership roles.

The new Defense Digital Service is bringing in coders from companies such as Google, Palantir, and Shopify for a "tour of duty" with the department. "We're also nearing completion of our pilot program called "Hack the Pentagon," where we invited vetted hackers to test our cybersecurity," the secretary said. The program exceeded expectations, he told the summit audience, with more than 1,400 hackers testing the security of DoD's networks and finding more than 100 bugs so far.



Kevin Baron, right, executive editor of Defense One, introduces Defense Secretary Ash Carter at the Defense One Tech Summit in Washington, D.C., June 10, 2016. Carter spoke about the intersection between technology and defense.

DoD photo by Jim Garamone

More needs to be done, Carter said, and he promised to continue his emphasis in this area until the day he leaves office.

AF Chief: Joint Force in Excellent Shape, but Needs Resources, Prioritization

DEPARTMENT OF DEFENSE NEWS, DEFENSE MEDIA ACTIVITY
(JUNE 15, 2016)
Jim Garamone

WASHINGTON—The joint force is in excellent shape, but leaders must pay attention to it, Air Force Gen. Mark A. Welsh III, the Air Force chief of staff, told the Defense Writers Group here today.

Welsh, a member of the Joint Chiefs of Staff, spoke to the group as one of his last public acts in office. He retires later this month after 40 years in uniform.

Welsh said he agrees with Marine Corps Gen. Joe Dunford, the chairman of the Joint Chiefs of Staff, that transnational, multi-domain threats will be the hallmark of conflict in the future.

"Compared to any other Service, the Air Force is already operating transnationally and across domains today," he said. "We cross a lot of boundaries."

Aircraft, by their nature, are a transnational asset, he said, noting that aircraft launching from the United States can cross a number of combatant commands. The Air Force also does multi-domain operations every day, he added.

The Navy is another Service with this expertise in its DNA, Welsh said. He noted the Navy is launching sorties from the Mediterranean Sea to the Middle East, crossing the boundary from U.S. European Command into U.S. Central Command's area of operations.

"But what we need to do as a joint force is how do we bring all that together," he said. "The other Services do the same thing—we just do it on a broader scale day to day." The American military is used to dealing with transnational and multi-domain conflict, the general said, but military leaders need to make sure the command and control systems, and sensor networks are capable of connecting across all lines.

Prioritization of Planning, Resources

The Joint Chiefs are worried about prioritization of planning and prioritization of resource assignment as they look at problems that straddle geographic lines, Welsh told the writers.

"If you take Russia as an example, if someone asks, 'What's the issue with Russia, and what's our plan for action if the



Air Force Chief of Staff Gen. Mark A. Welsh III speaks with airmen at Patrick Air Force Base, Fla., May 9, 2016. The general is retiring later this month and spoke about the joint force to the Defense Writers Group in Washington, June 15, 2016.

Air Force photo by Matthew Jurgens

next Russian action should occur? It's not just U.S. European Command, which is where everybody tends to look," he said. "European Command is worried about any engagement with Russia, but so is Central Command, so is Pacific Command, so is Strategic Command, Northern Command—everybody is worried about it."

The question then becomes how the military balances the priority for planning and resources across all those lines. "The chairman really has to be the one, along with the Joint Staff, to do that direction and prioritization," Welsh said. "That's what General Dunford is talking about."

Joint Force is Healthy

The joint force is really healthy, the general said—able to execute the strategy well and amazingly capable. "If you look at the results of joint operations over time, they are pretty darn good," he said. "There is no one on Earth that's as capable as the American military."

The joint force has the same problem the Air Force has, the general said. "We're short on people in many areas," he explained. "We need to modernize. We just have got to realize that for the tasks we've been given, there needs to be a certain level of resources assigned to it, or change the tasking." The last is not something military leaders decide, Welsh said.

"If we decide that the United States is not going to be as engaged and use its military as it has for the last 50 or 60 years, OK," he said. "Then we will tell you what the military needs to look like to do whatever the nation wants us to be able to do. But you can't expect to keep using us the way we've been used over the last 50 years and cut the size of the force and limit our ability to modernize it. That combination doesn't work."

DoD Experts Tell Congress Nuclear Modernization Efforts 'Crucial'

DEPARTMENT OF DEFENSE NEWS, DEFENSE MEDIA ACTIVITY

(JULY 14, 2016)

Karen Parrish

WASHINGTON—Modernization and sustainment across the nuclear triad are essential to maintaining national and allied security, three Defense Department experts told Congress today.

DoD witnesses Robert Scher, assistant secretary of defense for strategy, plans, and capabilities; Navy Adm. Cecil D. Haney, commander of U.S. Strategic Command; and Air Force Gen. Robin Rand, commander of Air Force Global Strike Command, testified today before the House Armed Services Committee's strategic forces subcommittee.



An Air Force T-38 Talon and B-2 Spirit fly in formation during a training mission over Whiteman Air Force Base, Missouri., Feb. 20, 2014. The B-2 is a multirole bomber capable of delivering both conventional and nuclear ammunition.

DoD photo by Air Force Staff Sgt. Jonathan Snyder

Maintaining Nuclear Deterrence

Scher said President Barack Obama's approach to reducing nuclear dangers "has consistently included two key pillars: working toward a world without nuclear weapons, and maintaining effective deterrence along the way." Because world nuclear disarmament is not assured, Scher said, "We must proceed with modernized replacements to maintain our nuclear deterrent for us and our allies."

The United States' sea-, air- and land-based nuclear delivery systems make up the "triad," which Scher called the best approach to maintaining nuclear deterrence. The triad and dual-capable aircraft, he said, "provide the credibility, flexibility, and survivability to meet and adapt to the challenges of a dynamic security environment."

Scher said the projected cost for the nuclear force's modernization is \$350 billion to \$450 billion over 20 years. "While not a small amount of money, ... the total defense budget in fiscal year 2016 alone was over \$580 billion," he said. "The cost for nuclear modernization is substantial, but it is not unreasonable for what [Defense Secretary Ash Carter] has called the bedrock of our security."

Modernizing will allow the United States to shrink its nuclear arsenal while still reassuring allies "that they do not need their own nuclear capabilities," Scher said.

Taking a Long Approach

Haney also emphasized the need for nuclear modernization. "Our capabilities as a whole have lasted well beyond their designed service life," he said. "It is crucial that we modernize our strategic deterrence capabilities, which underpin our national and global security."

Countries such as Russia, China, and North Korea have their own nuclear agendas, he said. "Comprehensive strategic deterrence and assurance and escalation control require a long approach ... and it's far more than just nuclear weapons and platforms," he added.

The president's proposed 2017 defense budget addresses modernization priorities and "supports my mission requirements," Haney said. "But let me be clear," he cautioned. "There are no margins to absorb new risk."

'Already Long Overdue'

Rand also spoke about "long-overdue" nuclear modernization efforts. Modernization plans are in place, he said, for the Minuteman intercontinental ballistic missile system, the bomber fleet, the air-launch cruise missile, the UH-1N helicopter, nuclear weapon storage facilities, and more.

"I am prepared to offer my opinion on the consequences to our nation's and our allies' security if these already long-



A newly upgraded RG31 rolls off the production floor at Letterkenny Army Depot. The route clearance vehicle is equipped with more horsepower, a larger transmission, independent suspension for improved mobility, and spotlights.

Photo by Pam Goodheart

overdue modernization efforts are not carried out according to their scheduled timelines," he said.

Letterkenny Introduces New Version of Mine-resistant Combat Vehicle

LETTERKENNY ARMY DEPOT PUBLIC AFFAIRS (JULY 25, 2016)

Janet Gardner

CHAMBERSBURG, Pa.—A ceremony celebrating the successful production of the latest version of the RG31, a mine-resistant ambush protected route clearance vehicle, was held on July 19 at Letterkenny Army Depot.

The rollout ceremony featured the latest variant of the RG31's configuration. Among the improvements were an engine upgrade from 275 to 300 horsepower; a transmission upgrade from 2500 to a 3000 series; an independent suspension for improved mobility; 360-degree spotlights for night visibility; and an armored gunner's hatch.

The event was hosted by Letterkenny Army Depot commander Col. Deacon Maddox and Col. Jason Craft, project manager for the Army Project Office, Assured Mobility Systems, MRAP Vehicles.

"When most people think of Letterkenny, they think of missiles," Maddox said. "What many people do not know about Letterkenny is that approximately one third of the depot's work is the route clearance vehicle, which includes the RG31..."

After congratulating the depot's workforce and reminding them of the important role they play in supporting the soldier in the field, Maddox shared the contents of an email he had received from a father of a soldier who recently survived a blast from an improvised explosive device.

The blast had destroyed the MRAP that the soldier and his fire team were in, but every occupant had walked away unharmed except for one soldier who suffered a broken nose. The soldier's father asked in the email, "What would have happened had my son not been in an MRAP?"

"Fortunately, such a question need not be answered because Letterkenny Army Depot is one of the depots helping to provide the best equipment possible for soldiers," Craft said. "This community, this city, and this state have done their part to ensure the soldier receives that equipment."

James Rowan, deputy commandant, Engineer Regiment, Maneuver Support Center of Excellence, Fort Leonard Wood, Missouri, represented the customer at the ceremony and accepted the newest variant of the RG31 from the Letterkenny Army Depot's RG31 portfolio team.

Before accepting the vehicle, Rowan said, "The Army and the nation made a major investment in the MRAP fleet of vehicles. This vehicle—the medium mine protected vehicle that is built on the RG31 MRAP platform—has already saved untold lives and will continue to do so in the future."

Rowan quoted comments made by then Secretary of Defense Robert Gates in July, 2008, "There is no failsafe measure that can prevent all loss of life and limb on this or any other battlefield. That is the brutal reality of war. But vehicles like MRAP, combined with the right tactics, techniques, and procedures provide the best protection available against these attacks."

Rowan asked the assembled group of the depot's workforce, invited guests, senior military leaders, and local community and political representatives to remember the critical importance of the work they do, and that the end-user and ultimate customer is the soldier who values and appreciates it.

The depot is scheduled to produce a total of 929 of the RG31s with a production end date of 2020.

Secretary Carter Opens Second DIUx Location in Boston, Updates DoD Outreach to Tech Community

DEPARTMENT OF DEFENSE NEWS RELEASE, PRESS OPERATIONS (JULY 26, 2016)

BOSTON—Today, Secretary of Defense Ash Carter formally opened the Boston location of Defense Innovation Unit-Experimental, or DIUx, the department's ground-breaking effort to strengthen connections to the American innovation economy and speed technologies into the hands of the warfighter. He was joined at the event by state and local officials, as well as technology leaders from the Boston area.

In May, Secretary Carter announced that the department would establish an East Coast office for DIUx, complementing the Silicon Valley office that opened in 2015, along with structural and management changes, dubbed "DIUx 2.0," to accelerate DIUx success in building bridges to entrepreneurs and innovators. The Boston location, the Secretary said, would provide important access to a core of innovative companies, universities, and other private institutions in the region, while enhancing its outreach to companies located throughout the country.

"This city is home to a tremendous legacy of service—one that will continue in a new way with DIUx," Secretary Carter said. "It's a testament to the fact that Boston has always been a place where great minds and great ideas come together to help advance the safety and security of our country. And that's what we do every day in the Department of Defense."

At the event, Secretary Carter also introduced two new members of the DIUx leadership team: Chief Science Officer Bernadette Johnson, the former chief technology officer at MIT Lincoln Laboratories; and Boston military lead Col. Mike McGinley, a lawyer specializing in cybersecurity issues who serves as an Air Force Reserve cyberwarrior. From Boston, Johnson and McGinley will work with the California-based partners announced in May to lead DIUx efforts across the country. The Secretary also announced that DIUx is exploring ways to bring together leading minds in the military and DoD who work on biodefense and biological technology together with world-class academic researchers, biotech com-

panies, and entrepreneurs such as Broad Institute Founding Director Eric Lander who attended today's announcement.

In addition to opening the new Boston location, Secretary Carter detailed new DIUx practices that are already enhancing the department's ties to the technology community. DIUx is now employing an innovation engagement mechanism called a Commercial Solutions Opening to take advantage of flexible new authorities for prototyping granted by Congress. The CSO allows tech firms to bring ideas to DoD in the same way they would to other buyers of commercial technology, streamlining paperwork requirements and allowing the department to provide funding in less than 60 days after first contact with a firm and within 30 days after receiving a formal proposal.

The Secretary also announced that DIUx will now be organized into three teams: a Venture Team, which will identify emerging commercial technologies and explore their potential impact on the battlefield; a Foundry Team, which will identify technologies that aren't yet fully developed or require significant adaptation for military applications; and an Engagement Team, which will introduce innovators to military problems and the military to entrepreneurs who can help find solutions.

"Over the last 11 months—since we first opened the doors of the West Coast office in Silicon Valley—DIUx has become a signature part of our outreach to the tech community. It's helped us connect with hundreds of entrepreneurs and firms—making great progress in putting commercially based innovation into the hands of America's soldiers, sailors, airmen, and Marines," Secretary Carter said.

Since the new leadership team took over in May under Managing Director Raj Shah, DIUx has begun work on 15 separate projects. The first contract to be awarded took only 31 days—and additional projects are expected to be on contract in the coming weeks, covering diverse technology areas ranging from secure network mapping to autonomous seafaring drones. Seven of these new problem sets were just posted in the last two weeks, to develop prototype projects on endpoint inspection, high-speed drones, and multifactor authentication, among others.

"I am proud to announce that in its first 75 days the new DIUx has made tremendous progress in rebuilding bridges to the technology community," Shah said. "We've demonstrated that the DoD can be just as nimble and innovative as the companies we want to do business with. I'm confident America's warfighters will benefit as a result."



Defense Secretary Ash Carter opens the Defense Department's second Defense Innovation Unit Experimental office in Boston, July 26, 2016. The Boston office joins the DIUx technology outpost Carter opened in 2015 in Silicon Valley, Calif.

DoD photo

AF Researching Advanced Manufacturing Techniques for Replacement Parts

88TH AIR BASE WING PUBLIC AFFAIRS (AUG. 1, 2016)

Bryan Ripple

WRIGHT-PATTERSON AIR FORCE BASE, Ohio—The Air Force Research Laboratory has awarded a \$10 million research project for refining the efficiency of Air Force aircraft part replacements to the America Makes—National Additive Manufacturing Innovation Institute in Youngstown, Ohio.

This will be the first project under a new five-year cooperative agreement between AFRL and America Makes, which was created to help advance the U.S. 3-D printing industry, also known as additive manufacturing.

"The goal of this Directed Project Opportunity is to improve the efficiency of Air Force air logistics complexes in rapidly replacing parts for legacy and other military aircraft by developing, demonstrating, and guiding the transition to the use of additive manufacturing and other types of related advanced manufacturing technology," said Dr. Dennis Butcher, the America Makes program manager.

The University of Dayton Research Institute will be the principal research leader on the project, while Youngstown State University will be the co-leader of the technical efforts. In addition to both universities, more than half of the 25

team partners, comprised of representatives of academia, industry, and the Air Force, are located in northeast Ohio. The Air Force Life Cycle Management Center here and Air Force Reserve Command's 910th Airlift Wing, located at Youngstown Air Reserve Station, will also play roles in the project.

America Makes has awarded \$8 million in AFRL-managed funds through the cooperative agreement from the Materials and Manufacturing Directorate, Manufacturing and Industrial Base Technology Division, the institute said in a news release. An additional \$2.87 million in matching costs has been contributed by the award project team for a total of \$10.87 million in funding for the research project. Both universities are sharing the funding equally throughout the project.

In addition to Air Force officials from three air logistics complexes at Robins AFB, Georgia; Hill AFB, Utah; and Tinker AFB, Oklahoma; the team will also work with several other Air Force and Defense Department bases and depots. For example, the 910th [AW] is home to DoD's only full-time, fixed-wing aerial spray mission.

"Since depot-level maintenance for their unique aerial spray mission systems is performed at the Youngstown base, the 910th [AW] is a good candidate for the application of additive manufacturing and other advanced manufacturing

In the News

techniques to support sustainment activities," said Dr. Mary Kinsella, the additive manufacturing product team leader.

In order to deal with challenges related to the sustainment of its fleet of aircraft, aircraft support vehicles, and machinery, this project will focus on additive manufacturing and related advanced manufacturing techniques such as reverse engineering tools, 3-D scanners, computer-aided design software, and non-destructive evaluation systems.

The America Makes public-private partnership model provides unique opportunities to leverage current member investments and to better align the internal research and development activities of industrial, academic, and government partners to a national additive technology road map.

"The challenge lies in finding replacement parts for an aging fleet, whose planes are flying well beyond their planned service lives," Brian Rice, the head of UDRI's multi-scale composites and polymers division stated in a UDRI news release. "One of the biggest hurdles to maintaining legacy aircraft

is securing out-of-production spare parts. In some cases, suppliers have gone out of business, or they will no longer support the production of spare parts for older aircraft. It's just not profitable for them."

The answer lies in additive manufacturing—commonly known as 3-D printing—which uses a computer-driven printer to deposit successive layers of polymer, metal, or other media—from the bottom up—to create simple or complicated and intricate objects, as dictated by a 3-D, digital design file of the object, Rice said. Additive manufacturing can be used to print actual spare parts as needed, or it can be used to create very large tooling and molds to be used in traditional forms of manufacturing.

Air Force Declares F-35A Lightning II 'Combat Ready'

AIR FORCE NEWS SERVICE (AUG. 3, 2016)

JOINT BASE LANGLEY-EUSTIS, Va.— The F-35A Lightning II fifth-generation fighter aircraft was declared "combat ready" yesterday by Air Force Gen. Hawk Carlisle, commander of Air Combat Command.



F-35A Lightning II aircraft receive fuel from a KC-10 Extender tanker aircraft from Travis Air Force Base, Calif., during a flight from England to the United States, July 13, 2016. The fighters were returning to Luke Air Force Base, Ariz., after participating in the world's largest air show, the Royal International Air Tattoo. Officials announced Aug. 2, 2016, that the F-35A has achieved initial combat capability.

Air Force photo by Staff Sgt. Madelyn Brown

Defense Secretary Ash Carter offered his congratulations to the Air Force. "This is a significant milestone for an aircraft that will allow the U.S. to maintain the advantage of air superiority for years to come," Carter said in a statement. "I know that even after being declared combat ready, there is more work to do with this critical program, but the Air Force, Air Combat Command, and the men and women of Hill Air Force Base should be proud of this major step forward for the F-35A."

Carlisle lauded the aircraft's performance, noting that the aircraft had met all key criteria for reaching initial operational capability: airmen trained, manned, and equipped to conduct basic close air support, interdiction, and limited suppression/destruction of enemy air defenses in a contested environment with an operational squadron of 12-24 aircraft; the ability to deploy and conduct operational missions using a program of record weapons and missions systems; and having all necessary logistics and operational elements in place.

"I am proud to announce this powerful new weapons system has achieved initial combat capability," Carlisle said. "The F-35A will be the most dominant aircraft in our inventory because it can go where our legacy aircraft cannot and provide the capabilities our commanders need on the modern battlefield."

Fifth-Generation Aircraft

The F-35A is the latest addition to ACC's fleet of deployable and fifth-generation aircraft, said officials, adding that the aircraft provides air superiority, interdiction, suppression of enemy air defenses, and close-air support as well as great command and control functions through fused sensors; and it will provide pilots with unprecedented situational awareness of the battlespace that will be more extensive than any single-seat platform in existence.

"Bringing the F-35A to initial combat readiness is a testament to our phenomenal airmen and the outstanding support of the Joint Program Office and our enterprise partners," Air Force Secretary Deborah Lee James said. "This important milestone for our fighter force ensures the United States, along with our allies and international partners, re-

mains prepared to deter, deny, and defeat the full spectrum of growing threats around the globe."

Chief of Staff of the Air Force Gen. David L. Goldfein said the aircraft's dynamic new capability will benefit the joint warfighter.

"The combat-ready F-35A is the latest fifth-generation fighter aircraft in the Air Force's inventory and provides our nation air dominance in any environment. The F-35A brings an unprecedented combination of lethality, survivability, and adaptability to joint and combined operations, and is ready to deploy and strike well-defended targets anywhere on earth," Goldfein said. "Today's declaration of IOC is an important milestone on the road to achieving full warfighting capability for the F-35A."

Successful June Deployment

The 34th Fighter Squadron of the 388th Fighter Wing, based at Hill Air Force Base, Utah, is the Service's first operational F-35A squadron, having met all the established criteria for initial operational capability including a successful June deployment to Mountain Home AFB, Idaho, and a series of eight-aircraft sorties held in mid-July. Members of the 34th FS will fly and maintain the F-35A alongside Air Force Reservists from Hill's 419th Fighter Wing.

"Our airmen have worked tirelessly to make sure our aircraft are combat ready: meeting challenges head-on and completing all the required milestones," said Air Force Col. David Lyons, the 388th Fighter Wing's commander. "We're very proud that the Air Force has declared us combat ready and we're prepared to take this aircraft wherever it's needed in support of our national defense."

Those sentiments were echoed by Air Force Col. David Smith, the 419th Fighter Wing's commander.

"It's an honor to fly and maintain the F-35 with our active-duty counterparts here at Hill," Smith said. "Our units were the first to fly combat-ready F-16s nearly 40 years ago, and we're very proud to have made history once again in bringing the Air Force's newest fighter jet to IOC."